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**Abstract****A Digital Filter For IQ-Generation, Noise Shaping  
and Neighbour Channel Suppression**

A polyphase filter of order  $x \cdot N$  that is building  $N$  allpass filters of order  $x \cdot N$  according to the present invention has a structure of an allpass filter of order  $x$  comprising delay elements with a delay 1 and at least one multiplier, wherein all delay elements with a delay of 1 are replaced by delay elements with a delay of  $N$  and the sampling rate of  $f_s' = f_s/N$  with  $f_s$  being the sampling rate of the input signal.

Preferably the multiplier included in the structure of the allpass filter of order  $x$  comprises  $N$ -time multiplex multiplication coefficients that are used in a predetermined order.

(Fig. 1)